

Fig. 1

100

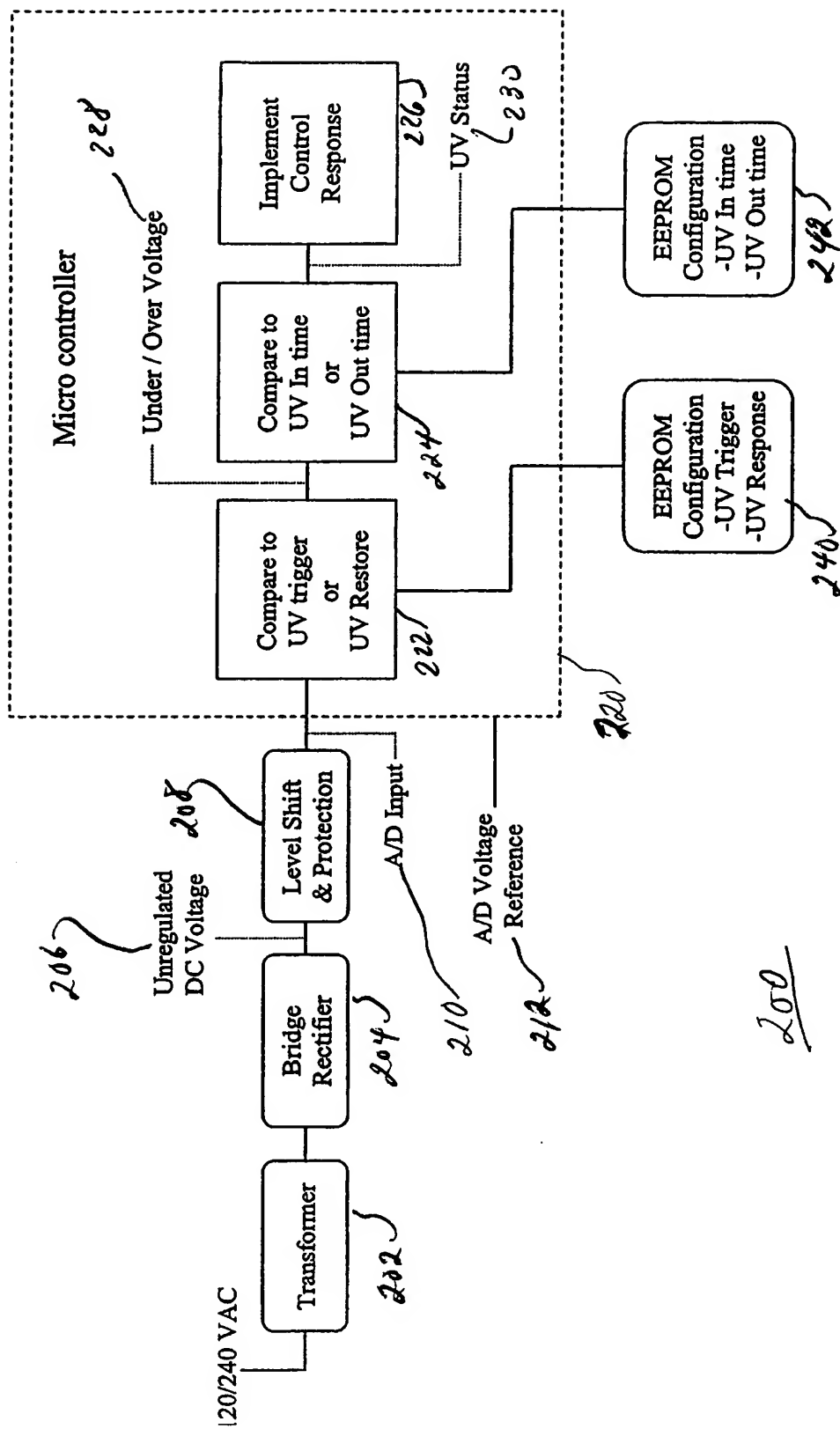


Fig. 2

200

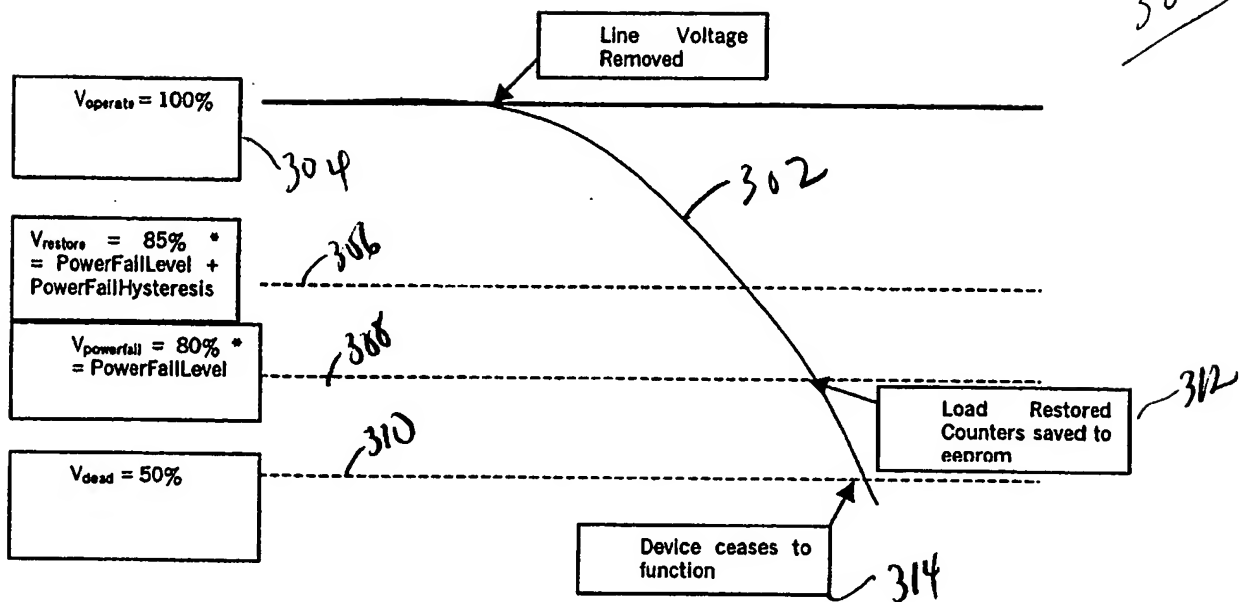


FIG. 3A

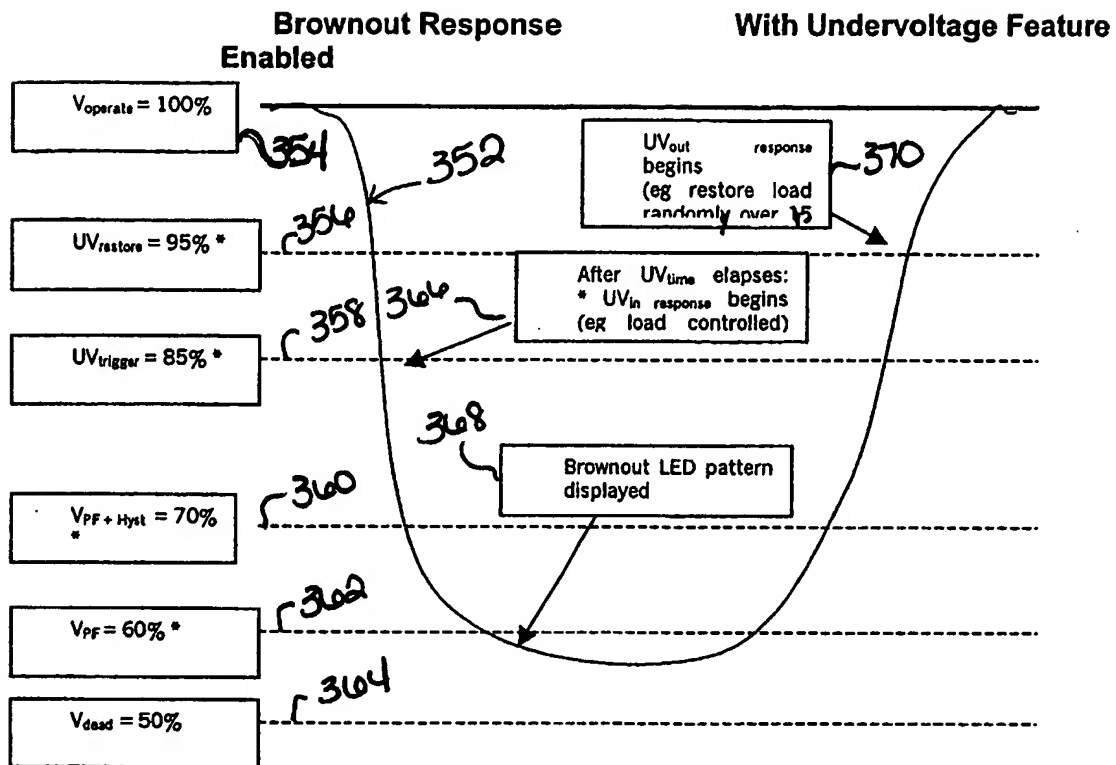


Fig. 3B

**Powerfall Response
Enabled**

With Undervoltage Feature

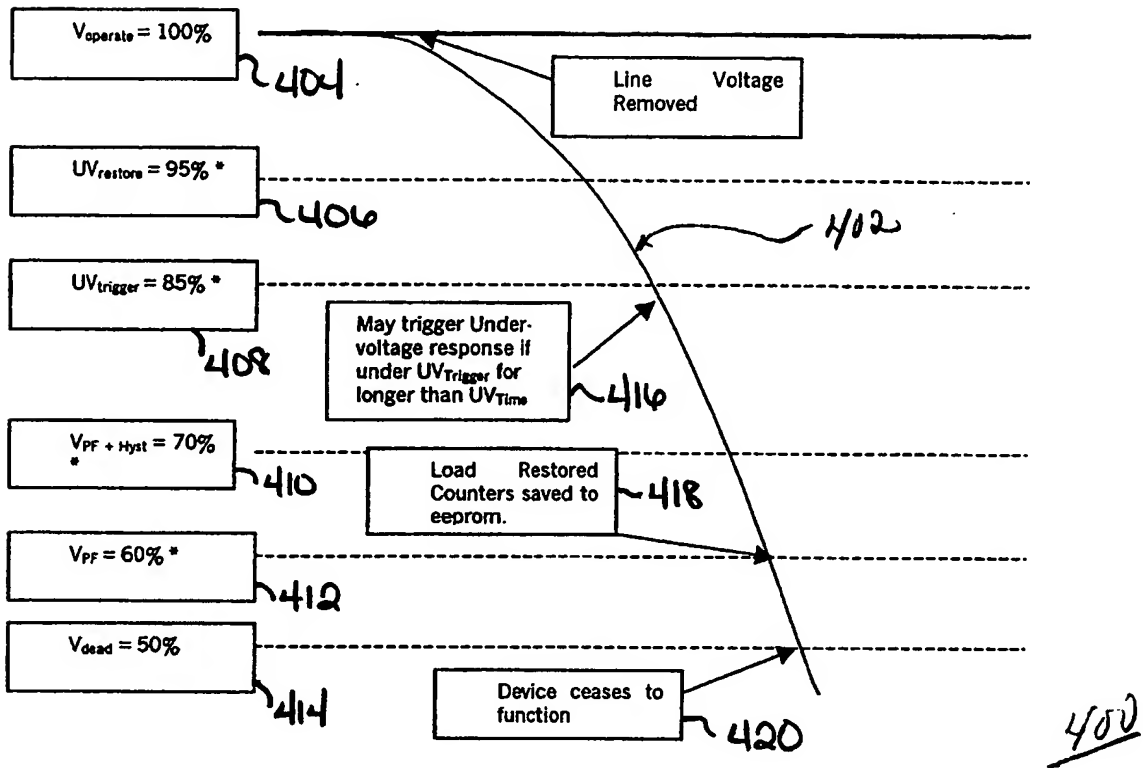


Fig. 4

Power Restore Response With Undervoltage Feature Enabled

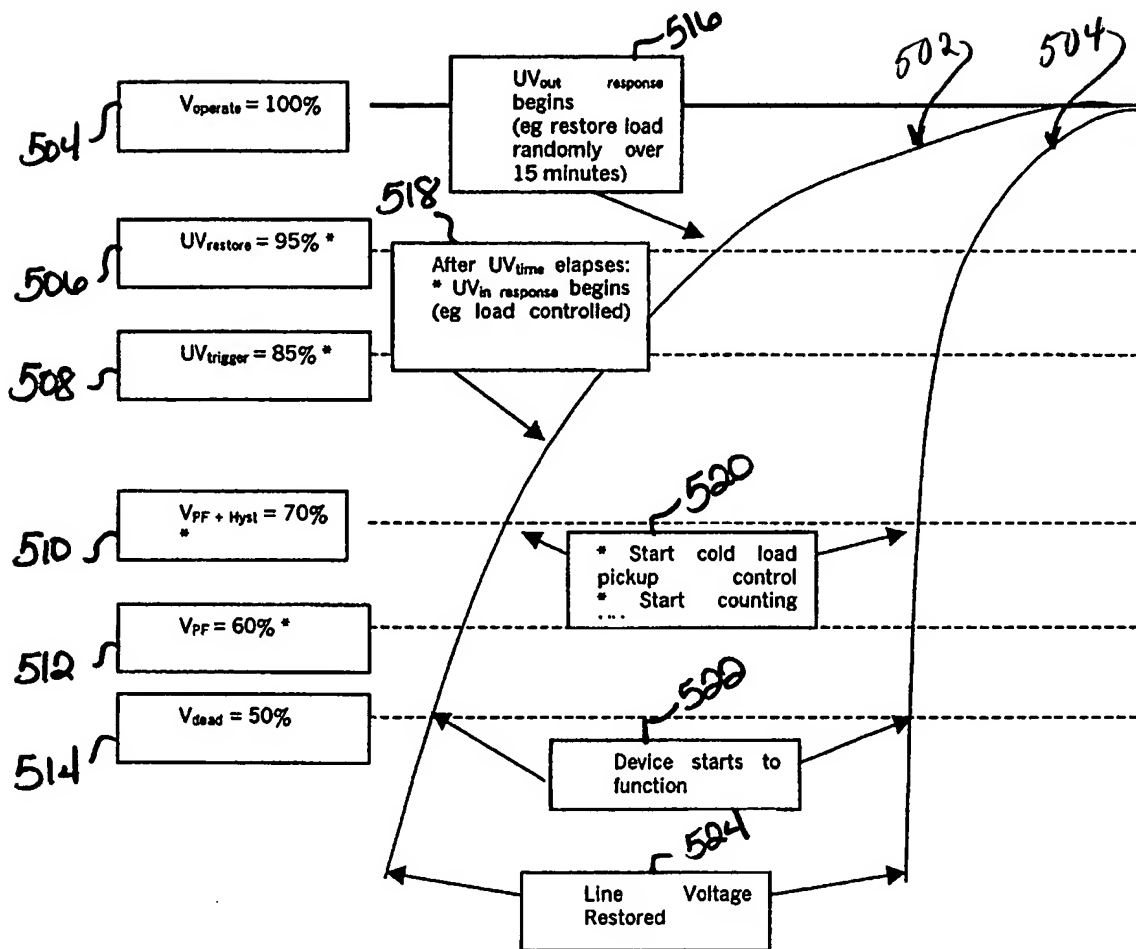


Fig. 5

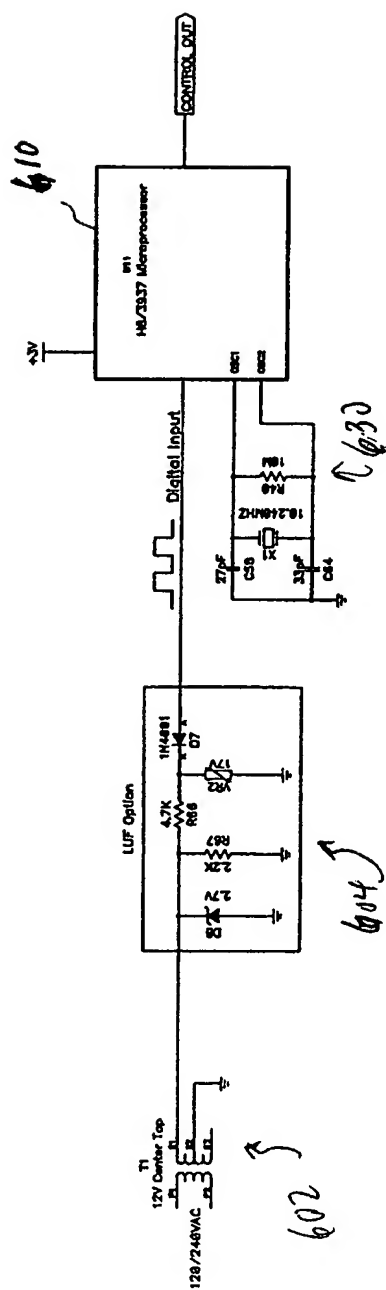


Fig. 6

600

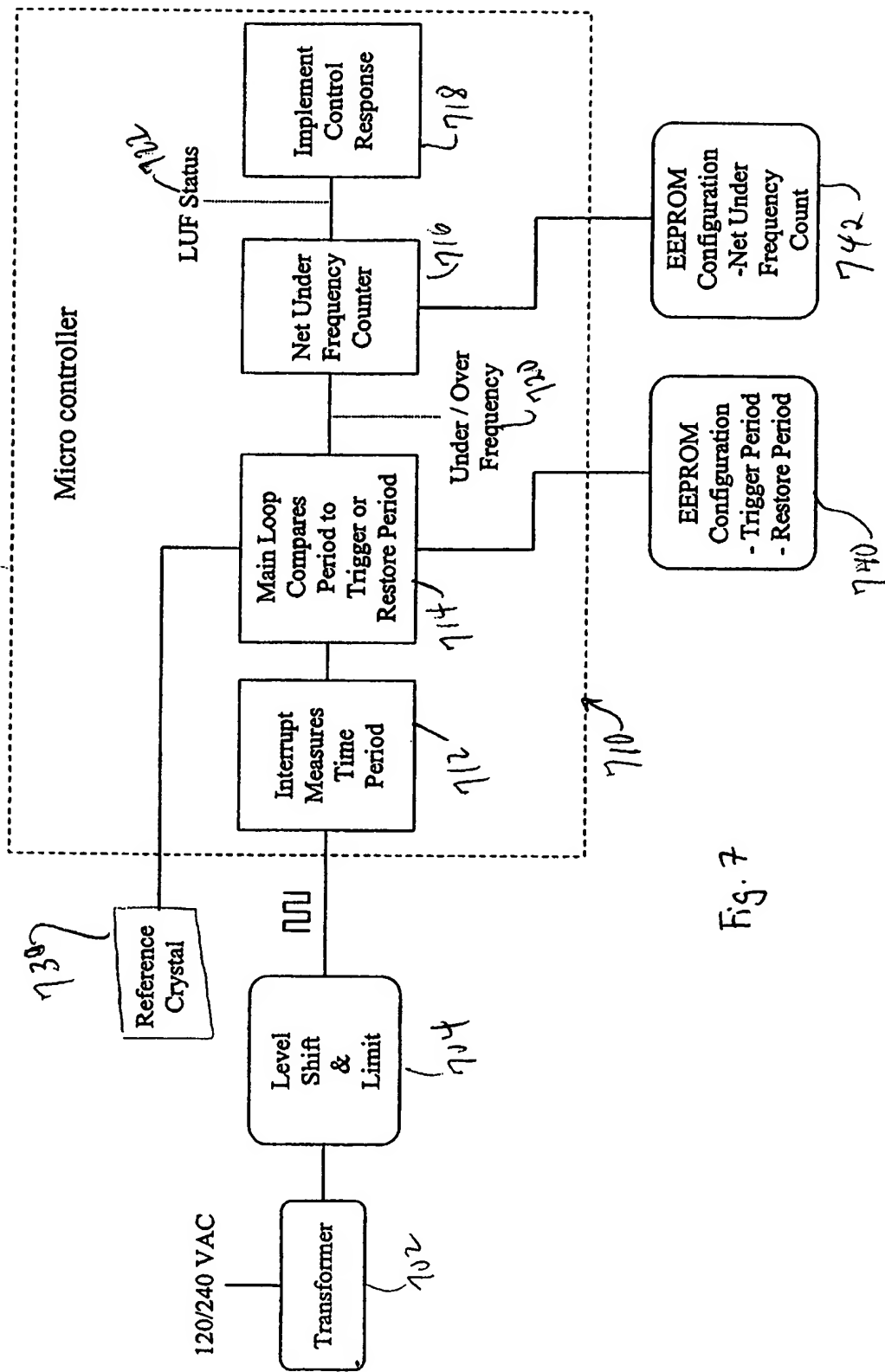


Fig. 7

700

1.1.4.1. Normal Operation (LUFStatus = 0)

For each sample, the length of the cycle is compared to the UFT_Trigger. If the cycle length is greater or equal to the trigger, then NUFCCount is incremented. If the cycle length is less than the trigger then NUFCCount is decremented.

If NUFCCount reaches NUFTTrigger, then a under frequency condition has been detected and then the LUFInResponse is implemented and the LUFStatus is set.

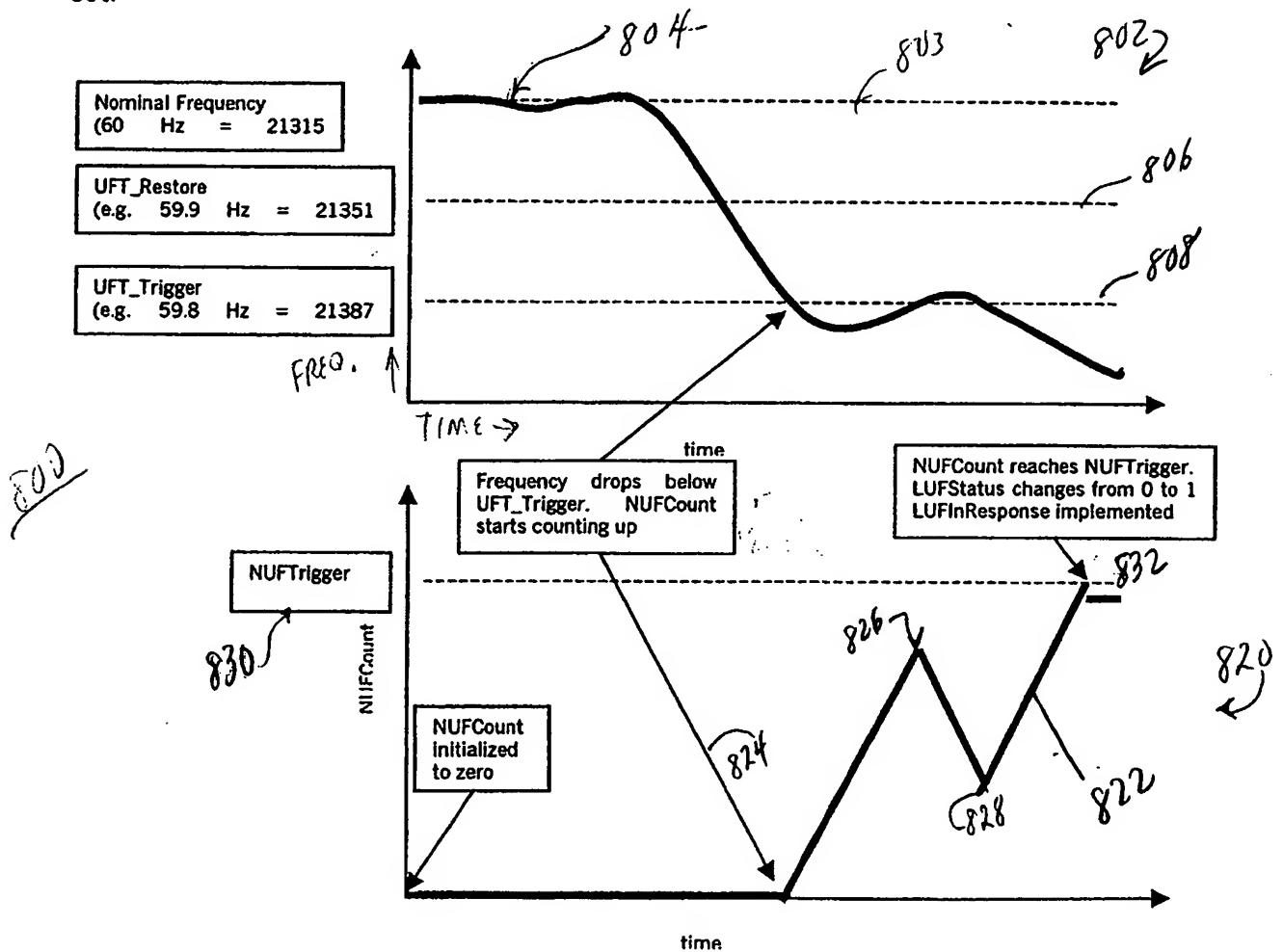


Fig. 8

1.1.4.2. Underfrequency Operation (LUFStatus = 1)

Once LUFStatus is set, then each cycle is compared to UFT_Restore. If the cycle length is greater or equal to the trigger, then NUFCOUNT is incremented. If the cycle length is less than the trigger then NUFCOUNT is decremented.

If NUFCOUNT reaches zero, then the under frequency condition has ceased, and then the LUFOutResponse is implemented and the LUFStatus cleared.

The NUFCOUNT is always in the range of 0..NUFTrigger.

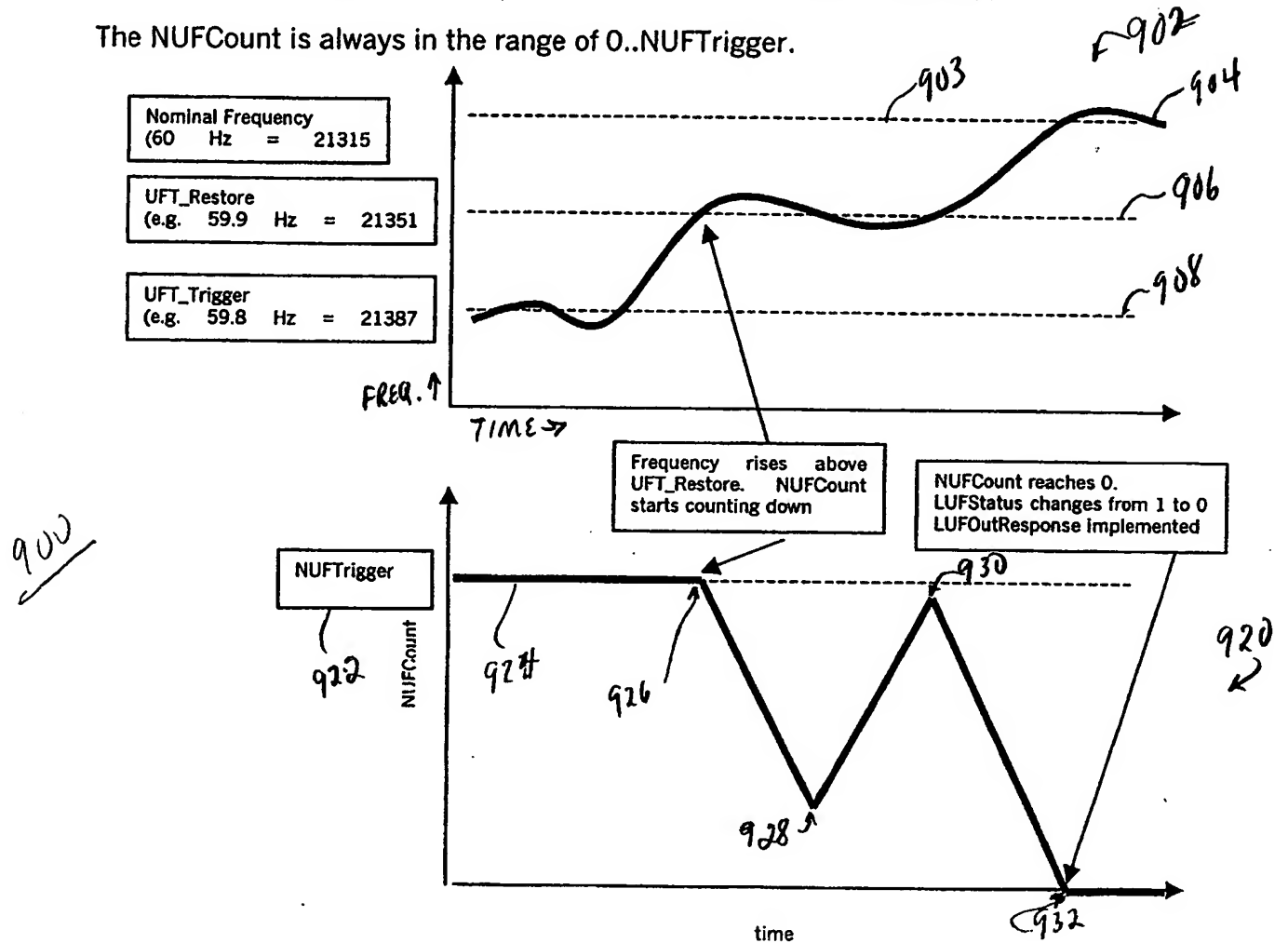


Fig. 9

1.1.5. OPERATION (ALGORITHM)

For each power line cycle:

If LUFStatus is Normal

 If $MLP \geq UFT_Trigger$

 Increment NUFCount

 Else

 Decrement NUFCount

 If $NUFCount \geq NUFTrigger$ AND NUFTrigger is non-zero

 Set LUFStatus to Under-Frequency

 Increment LUFCount

 Perform LUFInResponse (typically control all loads)

Else LUFStatus is Under-Frequency

 If $MLP \geq UFT_Restore$

 If $(NUFCount < NUFTrigger)$

 Increment NUFCount

 Else

 Decrement NUFCount

 If NUFCount is Zero or NUFTrigger is zero

 Set LUFStatus to Normal

 Perform LUFOutResponse (typically restore all loads)

Fig. 10

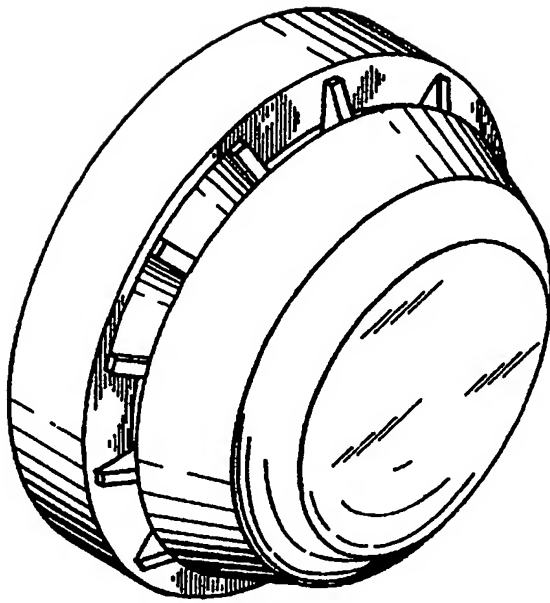


Fig. 11
Prior Art

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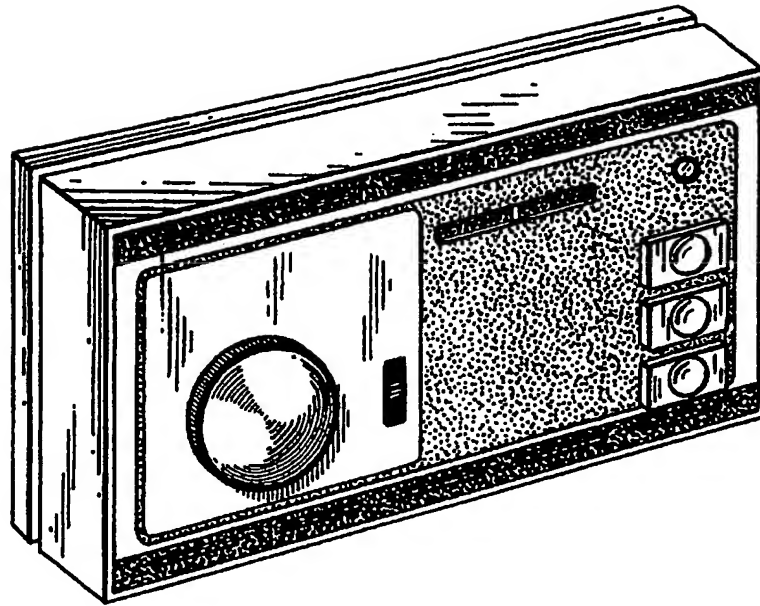


Fig. 12
Prior Art